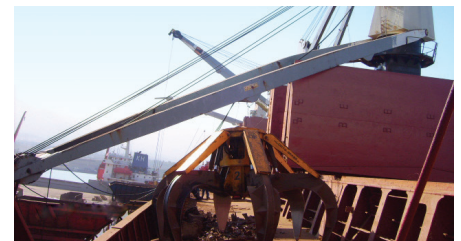




Deck crane inspections and maintenance

Deck cranes are an important item of ship's equipment, and when they break down this can result in loss of hire claims. Furthermore, failure of a deck crane can result in serious injury or death. Depending on the trade of the ship, the cranes may be used in every port or they may be used infrequently. However frequently they are used, they require regular inspection and maintenance. It is when a problem occurs with a crane that the maintenance records come under scrutiny. It is therefore important that in addition to having a planned maintenance system and carrying out the maintenance, it is properly recorded.



Inspection and Maintenance

Routine inspection and maintenance of the cranes (and grabs, if fitted) should be carried out according to the manufacturer's maintenance schedule and this should be incorporated into the ship's planned maintenance system.

In addition to routine maintenance, cranes are subject to test and examination. The International Labour Organisation (ILO) Convention 152 requires that a register of lifting appliance and loose gear be kept (what is often referred to as the cargo gear record book). Most flag states adopt this but some have not ratified the Convention or have their own requirements. ILO152 defines the examinations that should be carried out and that these examinations should be carried out by a competent person. This is usually a Class surveyor, with Class acting as the competent authority, but may be a crane specialist. The requirement is for a thorough examination annually and a retesting and thorough examination every five years, the latter of which includes a load test.

Records of these inspections are recorded in the cargo gear record book. This document is provided by the competent authority and forms the main part of the cranes' certification. Any major repairs should be recorded in the cargo gear record book. If the crane has been built to Class rules, and not all are, the annual and five-yearly examinations will coincide with the Class surveys.

Wires



Wire in poor condition

The wires for the cranes – those fitted and any spares – should each have a certificate and these should be kept with the cargo gear record book. Although not a requirement, the ship should maintain a record of the wires for each crane, listing the certificate for each wire and when the wires were fitted.

Wires should be regularly inspected for any damage. Wires may be damaged during cargo operations, in particular, due to chafing against the hatch coaming. Deck crew on watch during cargo operations should notify any damage as soon as it is identified and prepare a stevedore damage report. Damaged crane wires should be assessed for replacement in accordance with the crane manufacturer's guidance or in accordance with ISO4309 – Cranes – Wire ropes – Code of practice for examination and discard.

Wires should be lubricated with the correct wire rope lubricant. The lubricant serves two purposes – to lubricate internally and externally and to protect against corrosion. Grease should not be used. Wire strands move against one another as the wire is tensioned and as it passes over sheaves. The wire rope lubricant will penetrate into the core of the wire, whereas grease will sit on the surface of the wire and either be washed off or be contaminated with cargo dust and form a thick layer on the surface of the wire.

Hydraulic Oil

The majority of cranes onboard ship are of the electro-hydraulic type. It is important that the hydraulic oil is maintained in good condition. In addition to regularly checking oil levels, filters should be regularly inspected. These often have indicators to show when they need cleaning and may have a magnet fitted, which should be inspected for any significant build-up of ferrous debris.

One of the biggest causes of failures of hydraulic systems is dirty oil. Although hydraulic oil may look clean, particles in the oil that cannot be seen by eye can cause control valves to jam and will also cause wear of components. Water in the oil can cause corrosion and if the oil emulsifies this can lead to sluggish operation. Routine oil analysis should be carried out to ensure that the oil is in a satisfactory condition and ideally, this should include a particle count.



Dirty oil cooler

It is important that the oil cooler is regularly inspected and cleaned, particularly if the cranes are being operated in high ambient air temperatures. This may need cleaning more frequently if the ship is regularly loading and discharging dusty cargoes. A dirty oil cooler may result in the crane cutting out if the high temperature limit is reached, which could lead to a performance claim if the cranes are repeatedly stopping. Hydraulic oil leaks should be attended to as soon as they have been identified. In addition to being a safety hazard, the stevedores may refuse to use the cranes.

Brakes and safety devices

The brakes on the cranes should be regularly inspected and their condition recorded. Band brakes often have indicators to show the correct brake tension but linings should be checked to ensure they are of adequate thickness and are not contaminated with oil. Disk brakes are usually checked by measuring the clearance, and this should be recorded in the maintenance records.



Limit switch cover missing

One of the most important parts of the cranes is the safety devices. Limit switches should be regularly checked to ensure that they are operating correctly. The lower limit switch for the jib usually has a key-operated by-pass switch, used when stowing the jib. The key should never be left in the crane and it should not be possible for the switch to be inadvertently operated. The jib should only be operated below its lower limits when it is being stowed. Operating the jib below its lower limit while there is load on the hook can lead to failure of the jib or the luffing wire coming off its drum. Ensure that covers on limit switches are properly fitted and waterproof. If limit switches and controls are not functioning correctly, this can result in damage to the crane and/or risk of injury to personnel.

Deck cranes can be subject to demanding operating conditions, but the reliability of the cranes and the avoidance of costly and time-consuming breakdowns rely on the cranes being properly maintained.

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